

WHAT IS CLAIMED IS:

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1. An optical head comprising:
a light emitting element in which a plurality of light sources are integrally formed, said light sources being able to emit beams having different wave lengths to one another;
an optical system for converging a beam emitted by any one of said light sources of said light emitting element onto an optical information storage medium;
- 10 an optical separator for separating a reflected beam coming from said optical information storage medium from the beam coming from said light source; and
a light receiving element for detecting light quantities of the reflected beam separated by said optical separator.
- 15 2. The optical head according to claim 1, wherein said optical separator separates the reflected beam coming from said optical information storage medium from the beam coming from said light source by means of reflection and transmission.
- 20 3. The optical head according to claim 2, wherein an aligning direction of said light sources inclines by about 45 degrees in a rotational direction around an axis of the beam coming from said light source on the basis of a reflection axis of said optical separator.

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4. The optical head according to claim 3, wherein said light receiving element for receiving a zero-order diffracted light, which is located at a central position, is composed of regions of at least a number equal to four times of a number of said light sources, said regions being composed of region sets each of which includes four regions, each of said sets receiving the reflected beam which has been emitted by said light source and then reflected by said optical information storage medium.

10 5. The optical head according to claim 4, wherein said optical separator is composed of a parallel plate.

6. The optical head according to claim 1, further comprising an optical element disposed between said light sources and said optical system, which includes two kinds of diffraction grating disposed on front and back portions thereof, wherein depths, pitches angles for the axis of the beams of said two kinds of diffraction gratings are different from each other, respectively.

15 7. An apparatus for storing and reproducing optical information comprising:

a light emitting element in which a plurality of light sources are integrally formed, said light sources being able to emit beams having different wave lengths to one another;

20 25 an optical system for converging a beam emitted

by any one of said light sources of said light emitting element onto an optical information storage medium;

an optical separator for separating a reflected beam coming from said optical information storage medium
5 from the beam coming from said light source;

a light receiving element for detecting light quantities of the reflected beam separated by said optical separator; and

10 an electric circuit for transforming optical signals detected by said light receiving element to electric signals so as to output signals stored in said optical information storage medium as the electric signals.

8. A method of storing and reproducing optical information in an apparatus for storing and reproducing the
15 optical information with an optical head, said optical head including:

a light emitting element in which a plurality of light sources are integrally formed, said light sources being able to emit beams having different wave lengths to
20 one another;

an optical system for converging a beam emitted by any one of said light sources of said light emitting element onto an optical information storage medium;

an optical separator for separating a reflected
25 beam coming from said optical information storage medium

from the beam coming from said light source; and

a light receiving element for detecting light quantities of the reflected beam separated by said optical separator, said method comprising the steps of:

5 identifying the kind of said optical information storage medium;

making said light emitting element emit the beam having wave length corresponding to the identified kind of said optical information storage medium and then converging

10 the beam onto said optical information storage medium; and

detecting the reflected beam coming from said optical information storage medium and then outputting signals stored in said optical information storage medium as electric signals.